

CLAIMS:

1. A dielectric composition comprising a mixture of:
- a ceramic composition containing $\text{Ba}_a\text{RE}_b\text{Ti}_c\text{O}_3$, wherein RE represents a rare earth element, with $0.05 \leq a \leq 0.25$, $0.525 \leq b \leq 0.70$, $0.85 \leq c \leq 1.0$, and $2a + 3b + 4c = 6$, and free from lead and bismuth,
 - a glass composition comprising SiO_2 , a bivalent metal oxide chosen from the group consisting of MgO and ZnO and at least 10% by weight with respect to the glass composition of a further metal oxide chosen from the group consisting of Li_2O and TiO_2 , and
 - a metal oxide which is different from the bivalent metal oxide present in the glass composition.
2. A dielectric composition as claimed in Claim 1, characterized in that the metal oxide in the dielectric composition is an oxide of a metal chosen from the group consisting of magnesium, zinc, copper, manganese, cobalt, iron, nickel, erbium, holmium, indium, dysprosium, tungsten and yttrium.
3. A dielectric composition as claimed in Claim 1, characterized in that the further metal oxide in the glass composition is Li_2O .
4. A dielectric composition as claimed in Claim 3, characterized in that the glass composition essentially consists of 50-80% by weight of SiO_2 , 5-25% by weight of at least one alkaline earth metal oxide including MgO , and 10-25% by weight of Li_2O , and in that it is substantially free from boron.
5. A dielectric composition as claimed in Claim 4, characterized in that the alkaline earth metal oxide is primarily MgO .
6. A dielectric composition as claimed in Claim 1, characterized in that the bivalent metal oxide in the glass composition is ZnO , and in that the further metal oxide is TiO_2 .

7. A dielectric composition as claimed in Claim 1, 3, 4 or 6, characterized in that the glass composition is present in an amount of 3 to 5% by weight with respect to the ceramic composition.

8. A method of manufacturing a ceramic multilayer element comprising the steps of

- manufacturing a multilayer stack comprising a first ceramic foil, a first electrode comprising Cu, a second ceramic foil, and a second electrode comprising Cu, which ceramic foils are manufactured from a dielectric composition comprising a ceramic composition and a glass composition comprising SiO_2 , which ceramic composition contains $\text{Ba}_a\text{RE}_b\text{Ti}_c\text{O}_3$, wherein RE represents a rare earth element, with $0.05 \leq a \leq 0.25$, $0.525 \leq b \leq 0.70$, $0.85 \leq c \leq 1.0$, and $2a + 3b + 4c = 6$, the ceramic composition being free from lead and bismuth; and

- sintering the multilayer stack, characterized in that

- the glass composition contains a bivalent metal oxide chosen from the group consisting of MgO and ZnO and at least 10% weight with respect to the glass composition of a further metal oxide chosen from the group consisting of Li_2O and TiO_2 ,

- the dielectric composition further contains a metal oxide which is different from the bivalent metal oxide present in the glass composition, and

- the multilayer stack is sintered at a temperature of between 900 and 1080 °C and in an atmosphere which is non-oxidizing for Cu.

9. An electronic device comprising a first dielectric ceramic layer, a first electrode comprising Cu, and a second electrode, characterized in that the first dielectric ceramic layer is a sintered body comprising:

- a ceramic composition containing $\text{Ba}_a\text{RE}_b\text{Ti}_c\text{O}_3$, wherein RE represents a rare earth element, with $0.05 \leq a \leq 0.25$, $0.525 \leq b \leq 0.70$, $0.85 \leq c \leq 1.0$, and $2a + 3b + 4c = 6$, and free from lead and bismuth,

- a glass composition comprising SiO_2 , a bivalent metal oxide chosen from the group consisting of MgO and ZnO and at least 10% by weight with respect to the glass composition of a further metal oxide chosen from the group consisting of Li_2O and TiO_2 , and

10. An electronic device as claimed in Claim 9,

5 characterized in that the first dielectric ceramic layer is present as a substrate.

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